

### **Remarks**

Claims 1 to 34 are pending in this application of which, upon amendment, claims 1 and 33 are the only claims remaining in independent form.

The following table clarifies non-exhaustive sources of support for the different claim amendments (the paragraph numbers refer to those of the published application **2007/0111194**):

<b>Claim</b>	<b>Support/Status</b>
1	Claim 12 (nucleic acid); paragraph [0046] (solvent is more efficiently sorbed than the nucleic acid); claim 4 (sample is concentrated) in combination with, e.g., paragraph [0015]
2-32	NA or Cancelled
33	Claim 12 (nucleic acid); paragraph [0046] (solvent is more efficiently sorbed than the nucleic acid); claim 4 (sample is concentrated) in combination with, e.g., paragraph [0015]; paragraph [0027] (water, hydrophilic liquids . . .)
34	Claim 17 as originally presented

### **35 U.S.C. 112, SECOND PARAGRAPH REJECTIONS**

On page 2, the Office rejected claims 1 to 32 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 1, The Office expressed the opinion that it is unclear what is meant by "superabsorptive" in the context of the properties relevant to either a polymer or composite material. The Office in particular stated that in view of the lack of a clear definition in the specification, the boundaries of what is to be included in the invention, are difficult to ascertain.

Applicants would like to direct the Office's attention to page 3, lines 2 to 7 of the specification where the specification makes clear that "**superabsorbent** polymer" or a "**superabsorptive** composite material" allows, upon contact with the sample, at least a portion of the sample to be absorbed by the polymer or composite material (description p. 3, l. 2 - 7).

On page 4, starting in paragraph 8, the specification states:

"By "**superabsorbing**" or "**superabsorbent**" as used herein, it is meant that the polymers or materials have the characteristics of sorbing water or hydrophilic liquids, as well as low molecular weight materials, in particular salts, in copious amounts."

This definition conforms well with the general usage of the term in the art. E.g., the online encyclopedia Wikipedia (see attachment) defines superabsorbent polymers as follows: "Superabsorbent polymers are polymers that can absorb and retain extremely large amounts of a liquid relative to their own mass."

In addition, the term superabsorbent and superabsorptive are used throughout the specification, clarifying the meaning of these terms to the person of ordinary skill in the art. For the term "superabsorptive", the Office is in particular referred to paragraph [0014] (of the publication) cited above; paragraph [0028]; paragraph [0031]; paragraphs [0034]- [0036]; paragraph [0046] which provide functional, but also structural features that clarify the term superabsorptive as used in the context of the present invention.

Applicants note that a rejection of the claim under 35 U.S.C.112, second paragraph, is only appropriate if the language of the claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement (MPEP 2173.02). Considering the factors that are analyzed in a determination as to whether a term is definite or indefinite, namely:

(A) The content of the particular application disclosure;

(B) The teachings of the prior art; and

(C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made (MPEP §2173.02),

applicants respectfully submit that the "threshold requirements of clarity and precision" is well met (MPEP §2173.02, first sentence).

### **35 U.S.C. §103(a) REJECTION**

On page 3, the Office rejected claims 1 to 32 are under 35 U.S.C. 103(a) as being unpatentable over US 2005/0131362 to Przepasniak et al. (hereinafter "Przepasniak").

The Office expressed the opinion that Przepasniak teaches a polymerized acrylate for its absorbent properties. The Office referred in particular to paragraph [0064] and [0068] of Przepasniak's disclosure. The Office further expressed the opinion that it would have been obvious to one of ordinary skill in the art at the time the invention was made to select polymerized acrylate as an absorbent for a composition, make the same and use it as needed for absorbing e.g. a sample in Przepasniak, because the latter teach polymerized acrylate as a preferred molecule for an absorbent composition and the method of making and/or using it for such properties would have been merely a matter of routine optimization by one of ordinary skill in the art in the absorbency arts/or in need thereof.

Claim 1 has been amended and is, next to claim 33, the only claim remaining in independent form.

The claims as amended are directed at a method of concentrating and purifying a nucleic acid in a liquid sample. The method comprises:

"contacting said liquid sample having a volume and comprising a solvent

with a superabsorbent polymer or a superabsorptive composite material . . . , wherein, upon said contacting, the solvent is more efficiently sorbed than the nucleic acid and the sample is concentrated."

Claim 33 was amended accordingly.

All claims now focus on nucleic acids in the liquid sample recited in the claim and as formerly recited in claim 12.

Przepasniak, who discloses a personal care article comprising an absorbent binder composition as, e.g., disclosed in his paragraphs [0064] and [0068], does not make a reference to a "nucleic acid" in a liquid sample as now required by the claims.

Applicants note that under MPEP 2141(III), "the prior art reference (or references when combined) need not teach or suggest all the claim limitations." However, the MPEP notes that Office personnel "must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of skill in the art."

Applicants note that no such explanation was given with regard to the recitation of **claim 12** as previously presented (now cancelled).

Applicants also respectfully submit that all claims now require that the "sample is concentrated" as previously recited in **claim 4** (cancelled), which referred to "reducing the volume of the sample." Note that the specification explains, in paragraph [0015] of the publication:

*"In one aspect, the superabsorbent polymer or the superabsorbing composite material absorbs the solvent from the sample, thereby reducing the volume of the sample (i.e., effectively concentrating the sample)"*  
(emphasis added [0015]; Pellaux)

In Przepasniak personal care article, the absorbent binder provides the article with sufficient capacity to absorb and retain the intended amount and type of bodily exudate(s) (see paragraph [0079]; Przepasniak). There is no mentioning of

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“concentrating a sample” as required by all claims as amended, which allows concentrating a target entity, here a nucleic acid, in the sample.

Rather Przepasniak discloses the absorption of liquids by absorbing or superabsorbing polymer materials. However, Przepasniak deals with an article designed to fully absorb and retain a liquid. This is specifically mention e.g. in paragraph [0079] as cited above. In contrast to the invention, the selective absorption of solvent molecules and, optionally, low molecular weight impurities (compare clam 33) is not mentioned at all. Without additional measures (e. g. the choice of specifically designed absorbents which selectively absorb certain kind of components in a liquid sample) the article disclosed by Przepasniak is not suitable for concentrating or purifying a target entity in a liquid sample. Rather, the article by Przepasniak is intended to result and results in the complete absorption of the liquid sample.

In this context, applicants would also direct the Office’s attention to the dependent claims that recite, e.g., specific polymers and/or crosslinking degrees (see, e.g., claim 20 and following).

The Office expressed the opinion that adjusting the properties of the materials of Przepasniak constitutes only routine optimization by one of the ordinary skill in the art.

Given the quite different goals that Przepasniak seeks to achieve and which have been described above, applicants respectfully submit that the person skilled in the art would not recognize a particular parameter as a result-effective variable, i.e., a variable which achieves a recognized result, as required by MPEP §2144.05 II(B). As a result, the determination of the optimum or workable ranges of said variable cannot be characterized as routine experimentation. MPEP §2144.05 II(B) citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

## **Conclusion**

Applicants have shown above, that the terms "superabsorptive" meet the threshold requirement of clarity and precision set forth in MPEP §2173.02 and thus is not "indefinite".

Applicants have also amended claim 1 and 33 to incorporate limitations of previously presented claims 4 and 12 that clearly distinguish and render non-obvious, the claims of the present invention, in view of Przepasniak. Applicants have also presented arguments why a routine optimization will not lead to the claims as currently presented.

In view of the above, applicants sincerely believes that the claims are now in condition for allowance. However, if any issue remains, the Office is urged to call the undersigned at **301-657-1282** to seek a speedy resolution of such issue.

The Commissioner is authorized to charge any fee deficiencies and overpayments to deposit account number 50-3135.

Respectfully submitted,

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